Name: Rachel Fischhoff Grade: 5 Date: February 13, 2012

The Benches

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| Lesson Sources: *The California Frog-Jumping Contest*, Bill Jacob and Catherine Twomey Fosnot |
| Lesson Objectives: Students will explore the concepts of substitution and equivalence by finding multiple combinations of benches will the same length. |
| Standards: |
| Multicultural Content: |
| Materials and Advanced Preparation: chart (or SmartBoard?), posters/big paper, connecting cubes/Cuisenaires/manipulatives |
| Prior Knowledge and Skills Needed: arithmetic |
| Key/New Vocabulary: equivalence—kid friendly definition? Will this word really be used? |

Lesson Procedure: Part One

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| **Time** | **Teacher Actions** | **Student Learning Activities** | **Form of Assessment** |
| 1 min | **1. Connection**   * Mathematicians, last week you thought about Frog and Toad. Today we are continuing our exploration of the frog-jumping contest by helping the frog-organizers solve a problem they are having setting up the jumping tracks and benches for people watching the competitions. | Explain purpose of mini-lesson |  |
| 10 min max | **2. The Teaching (The Giving of Information):**  *“The frogs are planning a jumping contest. They have two jumping tracks; one is 28 feet long and the other is 42 feet long. They have decided to bring in benches from their storeroom and place them along both sides of each track end to end so the benches line the track lengths exactly. The benches in the storeroom are of two different lengths. One size is six feet long and the other size is eight feet long. How many six-foot benches should they get and how many eight-foot benches should they get in order to line both sides of both tracks? Help them make a list.”*  So what is the problem? (Need to line both tracks)  What supplies do they have? (Six- and eight-foot benches)  Can they cut a bench? (No) | * Active listening * Visuals | * Have students say back the scenario/answer questions |
|  | **4. The Link**  Today you will be working in pairs to help the frogs answer two questions:   1. How many six-foot benches and how many eight-foot benches are needed in order to line both tracks? 2. Are there other possible choices of six- and eight-foot benches that could be used?   Record your findings on record sheets (Appendix E). You may use manipulatives if you want. Some students will need to use them, and some won’t. We have not used cubes in a while, so they need to be reminded of math tool expectations. | **(Workshop Time)**   * Students select and implement strategies in partnership | * Conferring * Recording strategies |
|  | **Mid-workshop**  After several groups have found both solutions to 42  *While you are working, let me tell you one more part of the story. When the frogs went to the storeroom, they found that they had only 17 six-foot benches. Will these amounts work? What should they do?* | * I am wondering if this is a good stopping place for today? |  |
|  | **Preparing for Math Congress**  Mathematicians, you have done some great thinking and puzzling today. For our math congress, I want you to make a poster that answers these two questions (up on board)   1. The frogs decide they want new benches so they go out to price benches at different stores. What are their options for buying six-foot and eight-foot benches to place along both sides of their 28- and 42-foot tracks? 2. Explain how you know you have found all the possibilities. |  |  |
|  | **5. Closing (at the share)**  Share posters and strategies.  Focus on equivalence and exchange. | * A few partnerships will share their findings * Other students can contribute to the discussion | * We will collectively answer the poster-questions * Record findings |
| **Anticipated Responses/Outcomes:**   * What range of responses are you looking for? * What kinds of strategies do you think students will use? * How will stronger and weaker students work through activity? | | | |

**Reflections:**

How did the lesson plan work? What was effective? What did you learn? What would you change for tomorrow or the next time you will use this plan?